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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF

ACHIM GREFENSTEIN, ET AL.

SERIAL NO: 10/019,025

FILED: DECEMBER 26, 2001

FOR: BACKMOLDED PLASTIC  
MOLDINGS

: EXAMINER: BISSETT, MELANIE D.

: GROUP ART UNIT: 1711

DECLARATION UNDER 37 C.F.R. § 1.132

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

Now comes Dr. Achim Grefenstein who deposes and states:

1. That I am familiar with the invention claimed in the above-identified application.
2. I am a graduate of University of Aachen and received my Ph.D. degree in the year 1994.
3. I have been employed between 1996 and 2004 by BASF AG and I have been conducting research in the field of thermoplastic molding compositions and films and (co)extrusion thereof for approximately 11 years.
4. I have reviewed and understood the contents of CA 2,221,266 and U.S. 5,539,040 which were cited by the Examiner as prior art against the claims of the above-identified application.
5. In order to prepare the claimed plastic molding having fibers of lengths of greater than 1 mm, it is necessary to directly compound the plastic with the fibers.

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6. Molding machines that may be used for directly compounding a plastic and a fiber were available from only two companies Krauss-Maffay and Husky/Coperion in 2001. At the time the present application was filed, machines for direct compounding from these companies were not commercially available and were not known to those of ordinary skill in the art.

7. In order to demonstrate superiority of the claimed plastic molding the following experiments were carried out by me or under my direct supervision and control.

8. Plastic moldings containing fibers having a length of greater than 1 mm are superior to plastic moldings having fibers wherein the length is not greater than 1 mm. The superiority is reflected in the fracture behavior of plastic molding compounds as shown by the minor losses of the plastic molding.

Car decklids were fabricated using short fibers and long fibers and then subjected to a collision test. The results of the collision tests are presented in a minimum speed at which no minor losses arise. A decklid component made from a back molded ABS/PA material reinforced by short glass fibers in an amount of 20% by weight and having a top layer made of PMMA were shown to have a minor loss limit speed of 13.1 km/h at -30°C. The use of 15% by weight of long fibers instead of short fibers, adhering to the present claim limitations, exhibits a minor loss limit speed of 16.4 km/h.

At a temperature of 23°C, a minor loss limit speed of 19.7 km/h is exhibited for the decklids having 20% by weight of short fibers. In comparison, a minor loss limit of 22.5 km/h is demonstrated for a decklid having 20% by weight of long fibers.

|                         | Fiber length<br>> 1mm | Minor loss limit<br>speed (km/h) | Fiber content<br>(weight %) | Plastic       |
|-------------------------|-----------------------|----------------------------------|-----------------------------|---------------|
| <i>results at -30°C</i> |                       |                                  |                             |               |
| Comparative             | No                    | 13.1                             | 20                          | PMMA/(ABS/PA) |
| Invention               | Yes                   | 16.4                             | 15                          | PMMA/(ABS/PA) |
| <i>results at 23°C</i>  |                       |                                  |                             |               |
| Comparative II          | No                    | 19.7                             | 20                          | PMMA/(ABS/PA) |
| Invention II            | Yes                   | 22.5                             | 20                          | PMMA/(ABS/PA) |

9. The crash behavior of ABS decklids containing short and long fibers, respectively, was also examined. Decklids were subjected to a collision speed of 56 km/h at a temperature of 23°C. It is evident from the photograph attached herewith that the damage to the decklid having short fibers is worse than the damage exhibited by the long fiber reinforced decklid.

10. The results demonstrate that a significant improvement in fracture behavior and collision performance may be obtained when a backmolded plastic molding contains fibers having a length of greater than 1 mm in comparison to moldings that do not have long (e.g., > 1 mm) fibers.

11. Each of the above-mentioned tests is an art-recognized test and each test produces statistically significant results.

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12. I have reviewed and understand the scope of the claims in the above-identified application. The results observed for the materials in the tests mentioned above are, in my opinion, reflective of the results that would be obtained for other plastic materials that fall within the scope of the present claims.

13. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing therefrom.

14. Further deponent saith not.

  
\_\_\_\_\_  
Signature

21.7.2004  
\_\_\_\_\_  
Date

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